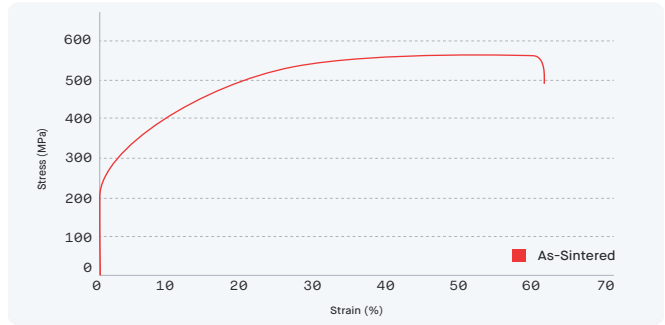


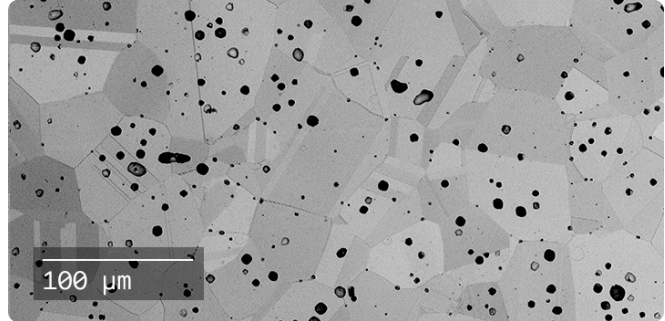
[Material Data Sheet]

316L v.2 Stainless Steel PureSinter Furnace



COMPOSITION %

C	0.03 (max)
Cr	16.0 - 18.0
Ni	10.0 - 14.0
Mo	2.0 - 3.0
Mn	2.0 (max)
Si	1.0 (max)
Fe	Balance



MECHANICAL PROPERTIES IN DESKTOP METAL PURESINTER FURNACE

	Standard	Studio System™ 2 As-Sintered	MIM - MPIF 35 Min As-Sintered	Wrought For reference
Ultimate tensile strength (MPa)	ASTM E8M	210 ± 12	520	425
Yield strength (MPa)	ASTM E8M	580 ± 5	175	170
Elongation at break (%)	ASTM E8M	72 ± 7	50	40
Young's modulus	ASTM E111	189	190	
Hardness (HRB)	ASTM E18	68 ± 2	67	95 (max)
Un-notched charpy impact strength (J)	MPIF 59	219 ± 10	190	
Density (g/cm³)		7.78 ± 0.04	7.6	

PERFORMANCE

	Standard	Studio System™ 2 As-Sintered
Boil test (corrosion)	ASTM F1089	Pass
Copper sulfate test (corrosion)	ASTM F1089	Pass
Sulfuric acid test (g/dm²/day)(corrosion)	MPIF 62	<0.001

OTHER STANDARD DESIGNATIONS

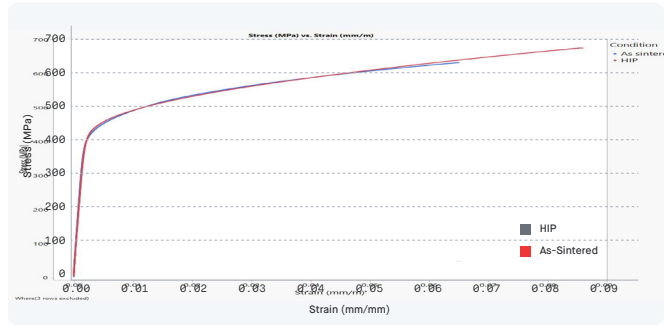
UNS S31603

EN 1.4404

1. Prior to corrosion resistance testing, all test samples were cleaned and passivated in accordance with ASTM A967.
2. Listed designations are for reference purposes only. Composition and mechanical properties may vary.
3. Per MPIF Standard 35, Materials Standards for Metal Injection Molded Parts (MPIF 35-MIM, 2018). End-use material performance is impacted (+/-) by certain factors including but not limited to part geometry and design, application and evaluation conditions, etc.
4. Wrought values based on ASTM A240 standards.

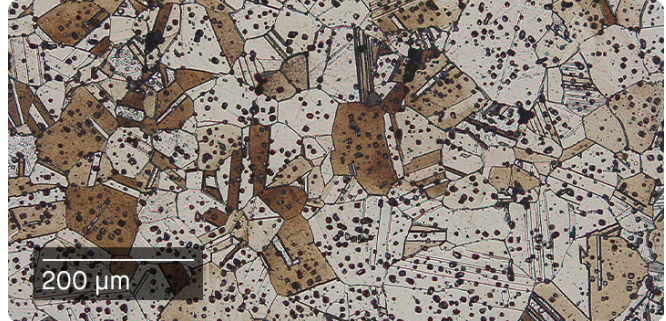
[Material Data Sheet]

316L v.2 Stainless Steel



COMPOSITION %

Fe	balance
Ni	10 - 14
Cr	16 - 18
Mo	2 - 3
Mn	2.0 (max)
Si	1.0 (max)
C	0.03 (max)



MECHANICAL PROPERTIES SINTERED IN THIRD-PARTY COMMERCIAL FURNACE

	Standard	Studio System™ 2 As-Sintered	MIM - MPIF 35 Min As-Sintered	Wrought For reference
Ultimate tensile strength (MPa)	ASTM E8M	533	450	425
Yield strength (MPa)	ASTM E8M	169	140	170
Elongation (%)	ASTM E8M	66	40	40
Hardness (HRB)	ASTM E18	66	67 (typ)	95 (max)
Density (relative)	ASTM B311	97%	95%	100%

PERFORMANCE

	Standard	Studio System™ 2 As-Sintered
Boil test (corrosion)	ASTM F1089	Pass
Copper sulfate test (corrosion)	ASTM F1089	Pass

OTHER STANDARD DESIGNATIONS

UNS S31603
EN 1.4404

1. Per MPIF Standard 35, Materials Standards for Metal Injection Molded Parts (MPIF 35-MIM, 2018).
2. Wrought values based on ASTM A240 standards.
3. Prior to corrosion resistance testing, all test samples were machined and passivated in accordance with ASTM F1089.
4. Listed designations are for reference purposes only. Composition and mechanical properties may vary.

End-use material performance is impacted (+/-) by certain factors including but not limited to part geometry and design, application and evaluation conditions, etc. Tensile properties and density data reported are mean values minus 1 sigma.

Due to the material's high elongation, strain values were obtained from crosshead displacement. In conformance with ASTM E8M, total elongation was obtained from scribed marks on the gage length and yield strength was calculated from extensometer measurements.